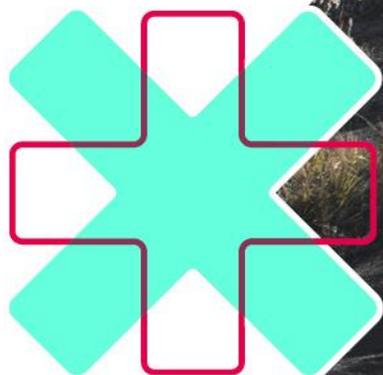
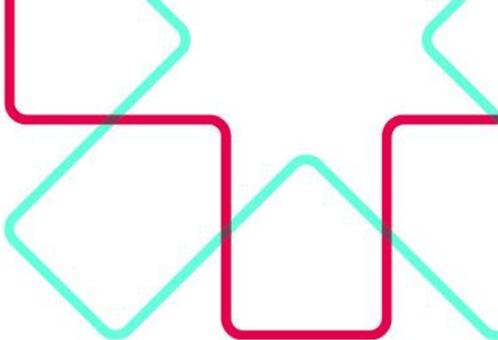


EVALUATION OF THE WHAI HUA PRIMARY GROWTH PARTNERSHIP PROGRAMME

Public Report

August 2017





CONTENTS

Executive summary	1
Background	5
Evaluation findings	8
Most Programme objectives were achieved	8
Progress to delivering on outcomes	9
Wider spill-over benefits look likely to be achieved	13
Whai Hua was a well-planned and managed programme	13
Lessons for future programmes	16

APPENDICES

Appendix 1 : Evaluation Terms of Reference	18
---	-----------

FIGURES

Figure 1: Whai Hua PGP Programme Outcome Logic Model	7
--	---



PREFACE

This report has been prepared for the Ministry for Primary Industries by Michael Mills from MartinJenkins (Martin, Jenkins & Associates Limited) and Dr Kevin Marshall, an independent subject matter expert appointed by the Ministry for Primary Industries to support the evaluation.

Dr Marshall, a biotechnologist and chemical engineer, is current chair of the Riddet Institute CoRE, Food Industry Enabling Technologies, NZ Food Safety Science and Research Centre and the Industry Advisory Panel of the High Value Nutrition National Science Challenge. He is a director of Seafood Innovations Ltd and the Bioprocessing Alliance. He is a reviewer of proposals for MBIE and Callaghan Innovation. His previous experience includes the Investment Advisory Panel of the Primary Growth Partnership, the board of Plant and Food Ltd and roles as managing director of ViaLactia Biosciences Ltd, group director R&D of the New Zealand Dairy Board and chief executive of the New Zealand Dairy Research Institute (now Fonterra Research Centre).

MartinJenkins advises clients in the public, private and not-for-profit sectors, providing services in these areas:

- Public policy
- Evaluation and research
- Strategy and investment
- Performance improvement and monitoring
- Organisational improvement
- Employment relations
- Economic development
- Financial and economic analysis.

Our aim is to provide an integrated and comprehensive response to client needs – connecting our skill sets and applying fresh thinking to lift performance. MartinJenkins is a privately owned New Zealand limited liability company. We have offices in Wellington and Auckland. The company was established in 1993 and is governed by a Board made up of executive directors Kevin Jenkins, Michael Mills and Nick Davis, plus independent directors Sir John Wells (Chair) and Hilary Poole.



EXECUTIVE SUMMARY

Background

The 'Whai Hua – New Dairy Products and Value Chains' Primary Growth Partnership (the Programme) was established in 2013 between the Ministry for Primary Industries (MPI) and the Whai Hua Partners¹, with the purpose of developing immune-enhancing dairy milk products targeting health conscious consumers in both export and domestic markets.

In total \$4.12 million was co-invested in the Programme, with \$2,081,000 provided by the Whai Hua Partners, and \$2,036,000 provided by MPI. The Programme was formally completed in December 2016.

The Programme aimed to achieve five objectives, based on developing new dairy products with immune-enhancing properties. The objectives were to:

- provide evidence of the products' functionality
- optimise the selection of dairy herds high in immune-enhancing properties as the basis for Product A
- develop an effective and safe multi-antigen immunisation protocol as the basis for Product B
- identify suitable processing parameters
- develop market intelligence and new markets for immune-enhancing dairy products.

The anticipated benefits of the Programme included an estimated net economic benefit to New Zealand of \$172 million over 20 years as well as a range of expected spill-over benefits to farmers and other suppliers, Māori, the wider dairy sector and New Zealand.

The Programme was successful and was a good investment by government and the Whai Hua Partners. It is likely that the anticipated net economic benefit will be realised, despite the Programme's failure to develop an effective and safe multi-antigen immunisation as the basis for Product B. It did successfully:

- establish a dairy herd capable of producing milk naturally high in immune-enhancing properties (Product A)
- provide evidence of the functionality of immune-enhancing milk products
- develop a method to process milk high in immune-enhancing properties
- gain sufficient market intelligence to engage with potential in-market partners.

Without the Programme and its funding, the progress that was made by the Whai Hua Programme would have taken considerably longer to achieve, probably by many years.

¹ The Whai Hua Partners consisted of Wairarapa Moana ki Pouakani Incorporation (WMI), Miraka Ltd (Miraka), and Kanematsu New Zealand Ltd (Kanematsu).



Progress to delivering on anticipated benefits and outcomes

Since the Programme's completion there has been tangible progress towards the development and commercialisation of dairy products based on the Programme's results.

Based on the evidence of progress reviewed by the consultants it seems likely that the originally estimated long-term net economic benefit of \$172M over 20 years will be realised. This will most likely be from WMI and Miraka's production of milk high in natural immune-enhancing properties and their processing of that milk, using new processing technologies developed by the Programme, into new higher value skim milk powder (SMP) and other dairy products that they will market both directly and potentially through an in-market partner.

Assuming that these products can be developed and profitably commercialised as planned by the WMI and Miraka, anticipated spill-over benefits will likely be realised. These benefits will likely be increased through the wider application of processing techniques developed through the Programme, the opening of further lines of research and product development, and the potential to apply and develop the methods used to establish a dairy herd with naturally high levels of immune-enhancing properties to establishing and maintaining herds specific to other milk characteristics.

Benefits, in the form of higher milk prices, will likely flow through to WMI's Māori farmers and other suppliers of milk to Miraka. Over the longer term, such benefits might also flow through to other farmers and manufacturers able to supply and process milk high in immune-enhancing properties.

From a wider New Zealand good perspective, the size of benefits will likely increase if technologies and intellectual property developed through the Programme are able to be made more widely available through licensing as provided for by the Primary Growth Partnership Agreement. Over the coming period of commercialisation, WMI and Miraka's interest will, be to maintain tight control over the intellectual property and technologies developed through the programme for as long as they can before licensing them as required by the Agreement.

It is currently unclear the extent to which the anticipated wider 'spill-over' benefits – including benefits to Māori, the New Zealand dairy industry and New Zealand as a whole from boosted confidence to pursue innovative research and development, to grow the skills and experience of Māori businesses, and to provide a commercial basis for more sustainable dairy farming practices – will be realised from the Programme alone. It is clear, however, that WMI and Miraka's involvement in the Programme has already resulted in the opening of further lines of research and product development, made possible by the work of the Programme. It also seems highly likely that Miraka's successful commercialisation of the Programme outputs will flow into higher milk prices for WMI and potentially other suppliers of raw milk to Miraka.

On programme planning and management

The Whai Hua PGP Programme was well planned and managed.

The Programme was based on a clear and well-articulated business case and its governance and management were underpinned by a robust outcome logic model (see Figure 1 on page 7).

Other key strengths of the Programme included:



- a strong unifying vision as to the potential for immune-enhancing products to contribute to the production of high-value dairy products
- that it built on previous work and working relationships undertaken by several of the Whai Hua Partners and AgResearch over a period of around eight years
- it brought together private sector participants (the Whai Hua Partners) with complementary skills who shared a common interest in developing high-value dairy products
- the collaborative approach taken by the Whai Hua Partners, who had complementary roles in the dairy value chain from farm to consumer marketing and a prior history of working together.

Important to the Programme's success was having an effective and efficient programme manager, who kept the Programme focused on its objectives and on track.

MPI added value to the Programme, in addition to co-funding, by providing focus in terms of reporting and accountability, advice on market access and facilitating engagement with other groups (such as the food safety part of MPI to provide guidance on food safety standards and label claims).

Lessons for future programmes

Particular points of strength that could usefully be applied to future PGP programmes included the importance of:

- a tight programme focus and tangible short to medium term milestones and objectives as a basis for success
- partners with established and collaborative working relationships
- partners with complementary (rather than competitive) interests who all benefit from the Programme's success
- good attention to detail in front-end programme establishment
- a programme design that provides for research providers to work closely with those involved in the processing and marketing components of a programme to achieve tightly focused outcomes
- the importance of sound and robust programme logic as a basis for a programme's effective management, governance and evaluation
- the importance of a capable and dedicated programme manager, able to maintain objectivity and keep the programme focused
- the importance of getting roles between chair and programme manager right – with the role of the chair focused on vision and leadership for governance, and the programme manager's role focused on management, focus and drive
- that having an independent chair may not always be necessary, especially in cases where there are pre-existing collaborative and complementary (rather than competitive) relationships between partners, and ownership of a common vision for success
- that benefits from unanticipated findings or developments may be as important as those from anticipated results



- that caution is required when considering environmental and multiplier spill-over benefits as part of a business case and investment decision; while theoretically possible, in practice these can be difficult to capture, difficult to attribute and in practice may be smaller than anticipated
- that more focus may be required during the development of a programme business case and its assessment as to how any desired public good spill-over benefits will be maximised, measured and attributed to a programme, noting the longer timeframes likely to be involved
- that considerable judgment is required at the establishment stage of a programme as to the desired balance between direct private benefits sufficient to offset the investment risks for private partners against the desire of MPI to maximise wider public good benefits necessary to justify Crown funding, and of how intellectual property and the commercialisation of programme results will be managed so as to achieve the desired balance of benefits and the participation of private partners.



BACKGROUND

The Primary Growth Partnership (PGP) programmes are intended to boost the economic growth and sustainability of New Zealand's primary industries by government and private sector partners co-funding market-led investments in innovative and knowledge creating activities.

The Whai Hua Programme

The Whai Hua Programme was established in April 2013 as a partnership between the Ministry for Primary Industries (MPI) and the Whai Hua Partners – Wairarapa Moana ki Pouakani Incorporation (WMI), Miraka Ltd (Miraka), and Kanematsu New Zealand Ltd (Kanematsu). AgResearch also played a major role as the Programme's science research provider and adviser.

The Programme's primary objective was the development of immune-enhancing dairy products targeting health-conscious consumers in overseas and domestic markets. It was intended to build on previous research work undertaken by AgResearch and WMI and through this for the Whai Hua Partners to grow their respective businesses into more differentiated and higher margin dairy products.

For the Whai Hua Partners there was also an opportunity to help develop Māori agribusiness capability and the intention that the Programme outputs would contribute to a more economically and environmentally sustainable dairy sector for New Zealand.

The Whai Hua Partners originally applied for matching funding of \$1,750,000 from the PGP. This was subsequently increased after two further extensions to the Programme in 2016. In the end the Whai Hua Partners provided \$2,081,000 and \$2,036,000 was provided by MPI for total funding of \$4,117,000.²

Objectives of the Whai Hua Programme

The Programme aimed to achieve five objectives, based on developing new dairy products featuring immune-enhancing properties. The objectives were to:

- 1 **Functionality:** provide evidence of biological functionality of the target immune-enhancing properties in humans as a basis for functionality claims and engagement with in-market partners.
- 2 **Product A:** optimise selection of a dairy herd with naturally high levels of immune-enhancing properties in its milk without compromising other production traits, as a basis for natural milk products with high immune-enhancing properties.
- 3 **Product B:** develop an effective and safe multi-antigen immunisation to boost levels of Product B in milk as a basis for enhancing probiotic dairy products.

² The difference in the total funding between the Whai Hua Partners and MPI is because the funding for the second extension to the PGP programme of \$236,000 was a 60:40 split between the Whai Hua Partners and MPI.



- 4 **Processing:** identify suitable milk processing techniques to ensure retention of high levels of product activity as a basis for production of safe dairy products with consistently high functional activity.
- 5 **Market Intelligence:** develop market intelligence and new markets (i.e. desk research and early market engagement to understand market sizes, values and expectations for Product A and B dairy ingredients) as a basis for market development and building business relationships with in-market partners with experience and presence in the immune health sector.

Through achieving these objectives, it was intended that the Programme would result in two new categories of 'value-add' dairy products ready for commercial development and marketing by the Whai Hua Partners.

Anticipated benefits and expected outcomes of the Whai Hua Programme

The business case listed a range of expected benefits, including direct benefits for the Whai Hua Partners and their shareholders and beneficiaries and wider benefits for the dairy industry, Māori and New Zealand more generally, being:

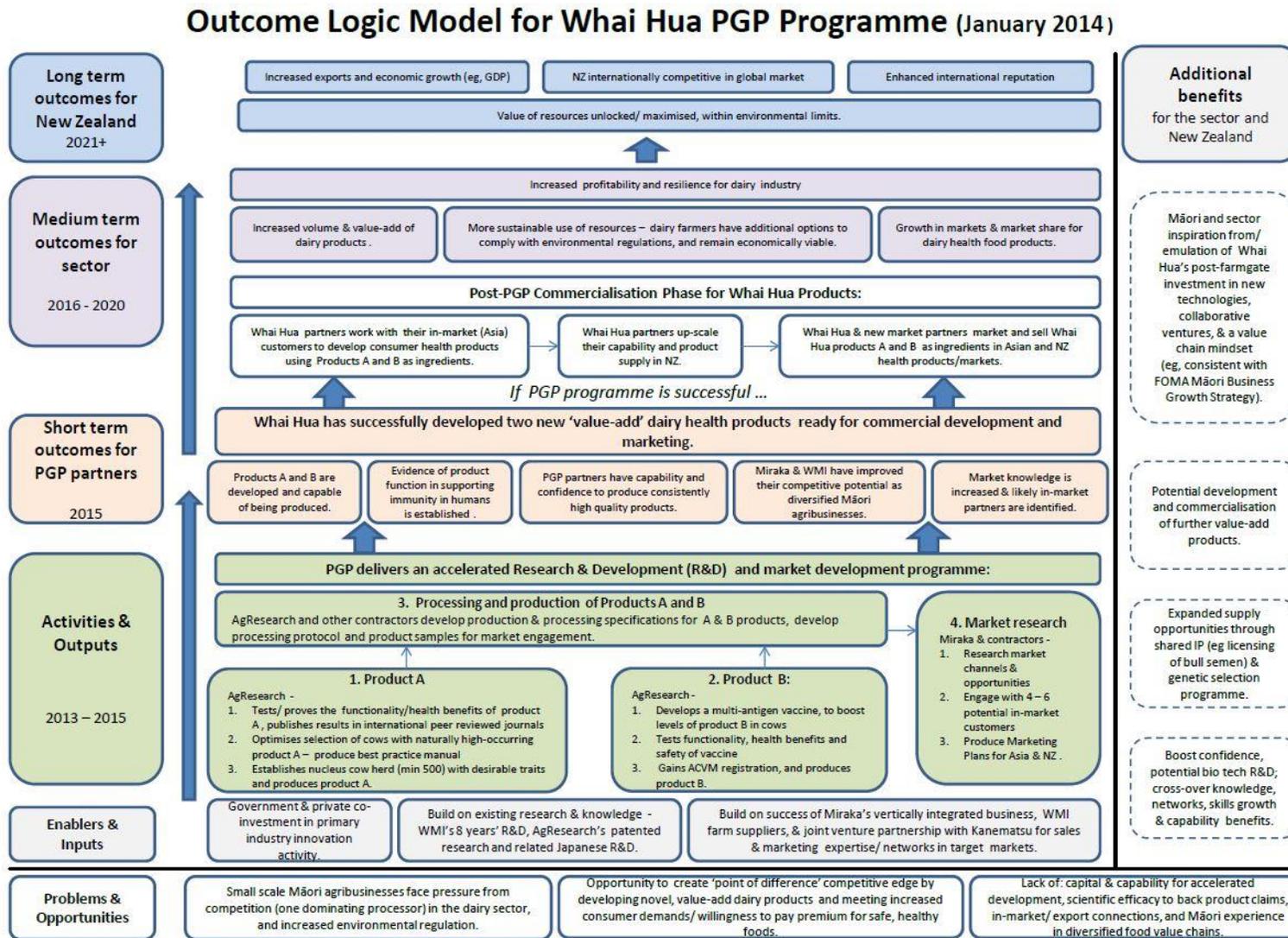
- an estimated net economic benefit to New Zealand of \$172 million over 20 years, based on the successful commercialisation by the Whai Hua Partners of the two products, most of which would be captured directly by the Whai Hua Partners through their commercialisation and marketing of products
- significant spill-over benefits as a result of the successful commercialisation of the two products, including:
 - a boost in confidence for the Whai Hua Partners, other industry participants and businesses more generally to pursue similar added-value strategies in the dairy sector
 - supporting a growth in the skills and capability of Māori business
 - development and commercialisation of additional value-add products from the process of commercialising A and B products
 - expanded supply opportunities through shared intellectual property and genetic selection programmes
 - opportunities to supply higher-value products to assist with the more sustainable use of resources.

These benefits were contingent on the Programme achieving its objectives and the Whai Hua Partners' subsequent success in commercialising products made possible by the Programme.

The links between Programme funding, outputs, short- and medium term objectives and longer-term outcomes were articulated in an Outcome Logic Model for the Programme, developed to underpin the rationale for investment in the Programme and its governance and management (see Figure 1).



Figure 1: Whai Hua PGP Programme Outcome Logic Model



EVALUATION FINDINGS

MPI engaged MartinJenkins, supported by Dr Kevin Marshall, in May 2017 to undertake an independent evaluation of the Whai Hua PGP Programme. A copy of the evaluation terms of reference are attached as Appendix 1. The focus of the evaluation was on how the actual achievements of the Programme compared to the expected outcomes, and what has been done since the completion of the Programme towards the commercialisation of the products and processes developed through it.

The approach taken to the evaluation involved desk-based review of Programme documents and reports supplemented by face-to-face interviews with key stakeholders involved in the governance and management of the Programme and in the subsequent work by the Whai Hua Partners to commercialise the results of the Programme.

Documents reviewed included the Programme business case, the contractual agreements between MPI and Whai Hua General Partner Ltd, the Outcome Logic Model for the Programme, quarterly and other Programme reports, the final Programme report, and various scientific and technical papers.

Most Programme objectives were achieved

The Whai Hua PGP Programme was a success and a worthwhile investment for both the Crown and the Whai Hua Partners.

The key achievements of the Programme were that it established or developed:

- **Evidence in support of functionality:** Research undertaken as part of the Programme established that immune-enhancing properties in cow's milk have equivalent bioactivity in human systems.

While supporting functionality claims, the evidence developed by the Programme was not intended to support claims of specific health benefits. Instead, it was intended that the work of the Programme would provide the basis for such research to be undertaken in future by an in-market customer.

- **Protocols and techniques to establish and maintain a dairy herd with high concentrations of immune-enhancing properties:** The Programme achieved establishment of a dairy herd capable of producing milk naturally high in immune-enhancing properties (Product A). This herd has been maintained since completion of the Programme.

In future it will be possible to replicate or extend this herd through application of:

- a replicable method developed by the Programme
- an acceptable method, developed through the Programme, for monitoring the concentration of immune-enhancing properties in cows – further work is required to develop this method so that it is reproducible between laboratories and to reduce its costs to farmers
- possible further development of a method to select bulls with higher than normal levels of immune-enhancing properties in the milk from their progeny.



- **A method and technology to process milk with high levels of immune-enhancing properties:** A key issue that needed to be addressed by the Programme was how to retain the bio-activity of immune-enhancing properties during processing.

Laboratory trials were conducted on processing parameters to retain high levels of bioactivity while still maintaining the conditions necessary to provide food safety. As a result of this research, the Whai Hua Partners, with FoodWaikato (Waikato Innovation Park), were able to build processing equipment to achieve the retention of immune-enhancing activity in the processed milk.

- **Market research and plans for the development and sale of naturally high immune-enhancing milk products:** Market development involved two stages – the first being desk-based studies, with the second being direct engagement with potential customers.

The result of this work was direct engagement with potential in-market customers, of whom several were identified for further engagement and of whom one signed an agreement with the Whai Hua Partners to test skim milk powder high in immune-enhancing properties as part of its product evaluation programme.

Against the Programme's successes was the mixed result in producing milk containing specific immune-enhancing properties necessary to promote the activity of probiotic products. Early efforts to produce such products ran into difficulties from an animal welfare perspective, and once a suitable alternative process was developed, the immune response produced was weak and irregular. Although a disappointment, new knowledge was gained through this stream of research that could provide the basis for more successful research in future. Without the PGP programme, such research would not necessarily occur, and the net overall benefits achieved through the Whai Hua Programme not realised so early.

Progress to delivering on outcomes

WMI and Miraka are confident in their capabilities and plans to achieve the commercial benefits anticipated by the Programme. To this end, they have decided to retain Whai Hua as an entity to own and manage IP and to support the development and marketing of resulting dairy products based on Product A and the new processing technologies developed through the Programme.

Overall, it is expected that the anticipated net economic and spill-over benefits identified for the Programme will be realised over time. Progress against each of the expected short-, medium- and long-term objectives and outcomes to realising these benefits is summarised in Table 1. Specific matters related to these conclusions are discussed in more detail following the table.



Table 1: Progress against expected short-, medium- and long-term outcomes

Desired outcome	Progress
Short-term outcomes (2013-16)	
Products A and B are developed and capable of being produced	Partly achieved (Product B was not able to be developed)
Evidence of product function in supporting immunity in humans is established	Achieved
PGP partners have capability and confidence to produce consistently high quality products	Achieved for Product A
Miraka and WMI have improved their competitive potential as diversified Māori agribusinesses	Achieved
Market knowledge is increased and likely in-market partners are identified	Achieved
Medium-term outcomes for sector (2017-25) ³	
Whai Hua Partners work with their in-market (Asia) customers to develop consumer health products using Product A and B as ingredients	In progress. Miraka is currently in negotiations with a potential in-market customer
Whai Hua Partners up-scale their capability and product supply in New Zealand	In progress. WMI is currently assessing commercial scale processing options based on the technologies developed through the Programme. Miraka is also working on the development of new immune enhanced and other branded products based on Product A and the processing technologies developed by the Programme.
Whai Hua and new market partners market and sell Whai Hua products A and B as ingredients in Asian and New Zealand health products / markets	In progress. Dependent on the outcome of current negotiations with a potential in-market partner.
Increased volume and value-add of dairy products	Likely. WMI and Miraka have produced short and longer term estimates of volumes, prices and margins for products that they plan to produce and market. These are summarised and discussed in more detail below.
More sustainable use of resources – dairy farmers have additional options to comply with environmental regulations, and remain commercially viable	Possible. If WMI and Miraka are successful in developing higher value dairy products based on Product A, WMI and other suppliers can be expected to benefit from higher milk

³ It is too soon for medium and long-term objectives to have yet been realised. Yet to be achieved in the progress column should not be interpreted as failure



Desired outcome	Progress
	prices which could provide the basis for more sustainable dairy farming practices.
Growth in-markets and market share for dairy health food products	Possible. Currently dependant on finding an in market customer to invest in the development of dairy healthy food health products and research to prove their effectiveness.
Long-term outcomes for New Zealand (2025+)	
Increased exports and economic growth, improved global competitiveness and enhanced international reputation	Likely to be achieved. While there is potential for Programme outputs to contribute to these long-term outcomes for New Zealand it is unclear at this time when and what this impact will be. The magnitude of this impact will be sensitive to WMI and Miraka's direct success and also the extent to which the intellectual property created through the Programme is able to be made more widely available to others in the New Zealand dairy industry.

WMI and Miraka expect that commercial benefits and intended outcomes will arise from:

- Miraka's application of processing technologies developed through the Programme to wider milk products
- Miraka's own production of consumer products high in immune-enhancing properties
- B2B sales of immune-enhancing products, including to customers likely to invest in developing and potentially proving the health benefits and efficacy of products high in immune-enhancing properties
- possible licensing of processing technologies developed through the Programme, though there are no immediate plans to do so.

In response to questions on expected financial returns, interviewees from Miraka and WMI commented that the best estimates remain those that were included in the final Programme report, the ranges of which are summarised in Table 2.



Table 2: Estimated economic benefits of the possible product – market combinations

	Product	Premium	Estimated net economic benefit
Application of new milk processing technologies to standard milk	Milk powder (SMP/WMP)	Similar to benchmark premium brands	\$0–\$10M pa
	Fresh milk (various)		\$5–\$15M pa
Application of new milk processing technologies to immune-enhanced milk	Milk powder (SMP/WMP)	Substantial margin above standard milk	\$0–\$10M pa
	Fresh milk (various)		\$5M–15M pa
Licensing of new milk processing technologies	Variety of potential applications		\$0–\$10M pa

The above estimate ranges are for a range of different and likely products, not all of which may be pursued, and some which may occur over a slower timeframe than was anticipated in the Programme business case. This means that actual annual financial benefits, especially over the short to medium term, may be smaller than the cumulative total of the estimates above for all products. That said, the quantum of expected financial benefits looks reasonable against initial expectations.

We did not have access to sufficient financial information, business plans, forecasts or other information to make definitive judgments on the extent to which the above financial benefits will likely be realised. The Whai Hua business case estimated \$172M of net economic benefit to New Zealand over 20 years.

From what we were told by interviewees from Miraka and WMI, we think that benefits from Miraka's application of new milk processing technologies to both standard and Product A milk are likely, and that those attributable to the licensing of new milk processing technologies are less likely to be realised over the short to medium term.

We have also concluded that over the long term, it is more than likely that the originally estimated \$172M net economic benefit to New Zealand will be realised, even after allowing for a longer than originally estimated period of time to get product into market and to ramp up production and without the originally anticipated revenues from Product B or from licensing of new milk processing technologies.



There are risks to the ability of WMI and Miraka to capture the above benefits, the main ones being:

- whether they can gain necessary regulatory approvals and sufficiently scale processing techniques to operate at commercial production volumes
- the speed with which Miraka can develop and position its own products in markets
- whether Miraka and WMI will be successful in attracting in-market partners to invest in the further development of immune-enhancing milk products and research to establish their efficacy as high nutritional value foods
- whether Miraka and WMI will be successful in protecting the IP developed through the Programme for long enough to develop and position products in markets.

Wider spill-over benefits look likely to be achieved

Benefits, in the form of higher milk prices, will likely flow through to WMI's Māori farmers and other suppliers of milk to Miraka. Over the longer term, such benefits might also flow through to other farmers and manufacturers able to supply and process milk high in immune-enhancing properties.

Participation in the Programme was positive for Miraka and WMI's attitudes to and appetite for research and innovation, as evidenced by ongoing collaboration with AgResearch.

From a wider New Zealand good perspective, the size of spill-over benefits will likely increase if technologies and intellectual property developed through the Programme are able to be made more widely available through licensing, though doing so will likely reduce the benefits able to be captured directly by the Whai Hua Partners. For Miraka, the longer it has to exclusively develop and commercialise these technologies, and to develop, position and market resulting products from their application, the greater the benefits it will gain.

Currently this balance between public and private benefits is managed through the PGP by providing a specified period of time during which programme partners can retain the intellectual property (IP) developed during a programme, before being required to make it publically available. The findings of this evaluation suggest that extensions to agreed periods of time to protect IP may sometimes be necessary to allow sufficient time for private partners to capture sufficient benefits to justify their initial investments.

On potential environmental benefits, higher milk prices will be critical to farmers being able to operate profitably within increased environmental constraints or limits. To this end, the Whai Hua Programme has likely been beneficial. That said, potentially higher milk prices made possible by commercialisation of the Programme's outputs will not on their own translate into more environmentally sustainable dairy farming practices and improved environmental outcomes.

Whai Hua was a well-planned and managed programme

The Programme was well planned and managed. Evidence for this conclusion was found in the:

- business case for the Programme



- logic model that underpinned the Programme's governance and management
- quarterly programme reports, with one set of reports prepared for all of the parties
- mid-term progress report
- positive responses to questions on the adequacy and effectiveness of the Programme's management from all interviewed Programme participants and stakeholders.

Well designed

Key strengths of the Programme included that it:

- was underpinned by strong unifying vision as to the potential of the Programme products to contribute to the production of high-value dairy products for the benefit of partners and suppliers, and the Māori and dairy sectors more generally
- built on prior work by several of the partners and AgResearch over a period of around eight years
- was underpinned by a robust programme logic that made clear the connections between the main Programme work streams, short- and medium-term Programme outputs and longer-term commercial outcomes and intended spill-over benefits for Māori farmers and the dairy sector more generally – this logic model provided a clear and sound basis for the Programme's on-going management and reporting and also for its evaluation
- brought together a small number of partners at different points in the dairy product value chain between dairy farmer and consumer – who shared:
 - a common interest in and commitment to the development of high value dairy products
 - a history of working together
 - complementary skills, experience and areas of expertise to the Programme
- was underpinned by collaborative, rather than competitive, relationships between partners and founded on a common vision that value-added products are needed to strengthen the competitiveness, profitability and sustainability of the New Zealand dairy industry
- encouraged and placed value on having scientific researchers working closely with others involved in product development and market research – while perhaps common sense to many, this was noted as a particular strength of the Programme by AgResearch
- provided for intellectual property to be well managed.

The Programme was relatively small in scale and budget compared with other PGP programmes. Rather than being a disadvantage, this was considered an advantage by its partners who commented that it helped ensure a tight focus on working towards the achievement of a small number of well-defined short- to medium-term objectives over its duration.

Benefited from effective management and governance

The Programme benefited from the services of a capable programme manager.

We were told of the critical importance of the programme manager role in keeping the Programme focused on its objectives and on track. We were also told that the programme manager's prior track



record and established relationships from working with WMI and AgResearch were positive factors in the Programme's success.

The steering group provided effective governance. We noted that while its chair was also chair of Miraka and WMI (and therefore not an independent chair, as is now standard practice for most PGP programmes) that was not a problem for this particular PGP programme, and may have been an advantage. The reasons for this were that:

- the chair brought a strong vision, that was shared by all partners, for what he wanted the Programme to achieve
- the partnership was collaborative, with no competing commercial interests between the partners
- the chair and Programme steering group were clear in their role and delegation of operational responsibilities to the independent and very capable programme manager.

Having an independent chair is likely to be more important in PGP programmes where there is the potential for competing interests or conflicts between partners and where it is important for the chair to be seen by all to be independent.

Programme management and governance were underpinned by a good quality initial business case, sound programme logic, good quality and objective quarterly reports, and mid-term progress and financial reports.

MPI added value in addition to government co-funding

We were told by all persons involved in the Programme, that without the PGP programme the progress that was made by the Whai Hua Programme would have taken considerably longer to achieve, probably by many years ("We achieved in four what might have taken ten years").

In addition to co-funding, MPI's contribution to the Programme's success included the role of its Investment Manager in:

- keeping the Programme focused and disciplined through its accountability and reporting requirements
- making connections to others (like food safety and labelling) that needed to be involved
- asking hard questions and challenging the Programme in ways that added value to its design and operation.



LESSONS FOR FUTURE PROGRAMMES

Several lessons can be taken from the Whai Hua PGP Programme for the design, establishment, management and governance and realisation of outcomes of future PGP programmes.

On programme design and establishment

The Whai Hua PGP Programme was well designed and executed. Particular points of strength that could usefully be applied to future PGP programmes include the importance of:

- a tight programme focus and tangible short- to medium-term milestones and objectives
- partners who bring established, collaborative working relationships to a programme
- partners who bring complementary (rather than competitive) interests to the programme and who equally benefit from a common vision for success
- good attention to detail in front-end programme establishment
- a programme design that provides for research providers to work closely with those involved in the processing and marketing components of a programme to achieve tightly focused objectives

On programme management and governance

- the importance of sound and robust programme logic as a basis for a programme's effective management, governance and evaluation
- the importance of appointing a capable and dedicated programme manager, able to maintain objectivity and keep the programme focused
- the importance of getting roles between chair and programme manager right – with the role of the chair focused on vision and leadership for governance, and the programme role focused on management, focus and drive
- that having an independent chair may not always be necessary, especially in cases where there are pre-existing collaborative and complementary (rather than competitive) relationships between partners including MPI, and a shared vision for success

On outcomes

- that benefits from unanticipated findings or developments may be as important as those from anticipated results
- that caution is required when considering environmental and multiplier spill-over benefits as part of a business case and investment decision; while theoretically possible, in practice these can be difficult to capture, difficult to attribute to a programme and in practice may be smaller than anticipated



- more focus may be required during the development of a programme business case and its assessment on how wider industry and public good spill-over benefits will be realised, measured and attributed to a programme, noting the longer timeframes likely to be involved
- considerable judgment is required at the establishment stage of a programme as to the desired balance between direct private benefits sufficient to offset the investment risks for private partners against the desire of MPI to maximise wider public good benefits necessary to justify Crown funding, and of how intellectual property and the commercialisation of programme results will be managed so as to achieve the desired balance of benefits
- reasonable periods of intellectual property exclusivity, that achieve a reasonable balance between ensuring that both the private sector partners and the Crown benefit equitably, need to be carefully considered in contracts for PGP programmes.



APPENDIX 1: EVALUATION TERMS OF REFERENCE

Terms of Reference for the Evaluation of the Whai Hua PGP Programme

Background

Supplying ingredients for food manufacture has long been a cornerstone of the New Zealand dairy industry's business. The challenge is to develop new added-value ingredients that will enhance the offering, based on working closely with in-market partners.

The Whai Hua – New Dairy Products and Value Chains PGP programme aimed to develop new immune-enhancing dairy milk products targeting health-conscious consumers in Asian and New Zealand markets.

It looked to do this by: producing milk with elevated immune-enhancing properties; process development; functionality testing; and market research.

The programme was a partnership between the Whai Hua Partners – Miraka Ltd, Wairarapa Moana Incorporated (WMI) and Kanematu NZ Ltd and MPI. It was approved in April 2013 and ended in December 2016. The total expenditure was \$4.1 million of which MPI's contribution was \$2.0 million.

MPI commissions independent evaluations of completed PGP programmes as a standard procedure. This document sets out the terms of reference for the evaluation of the Whai Hua PGP programme.

Further background on this completed programme is available at the link which follows:

<http://www.mpi.govt.nz/funding-and-programmes/primary-growth-partnership/primary-growth-partnership-programmes/whai-hua-new-dairy-products-and-value-chains/>

Scope

The evaluation will primarily assess the achievements and expected outcomes from the programme with a strong focus on outcomes. The evaluation will also include a review of programme execution and governance and any lessons from the programme that would benefit other PGP programmes or the PGP as a whole.

There are three key Evaluation Questions to be addressed:

- 1 What has been achieved by the programme and what are the benefits of the programme to New Zealand?
- 2 How well was the programme executed?
- 3 What are the lessons to be learnt from the programme and implications for other programmes and PGP as a whole?

The scope of the evaluation does not include the rationale for investing in the programme.



Terms of Reference

Description	Evaluation Questions
<p>1 Evaluate what has been achieved by the programme and what are the benefits of the programme for New Zealand</p>	<p>1. OUTCOMES:</p> <p>What has been achieved by the programme and what are the benefits of the programme to New Zealand?</p> <ol style="list-style-type: none"> Did MPI and the Whai Hua Partners get what they expected from the investment in the PGP programme – as set out in the original business case? Has the investment been worthwhile? Have the outcomes listed in the Final Programme Report achieved the expected <u>short term outcomes</u> identified in the original outcome logic model? Has the programme made sufficient progress for the commercialisation of new immune-enhancing milk products to proceed with confidence? Do the expected economic benefits and other intended medium- and long-term outcomes listed in the Final Report appear realistic? Have the Whai Hua Partners got the resources and planning in place to achieve these? Did/Will the programme create spill-over benefits and opportunities for other parties directly or indirectly? <p>Have there been any unintended outcomes or consequences (good or bad)?</p>
<p>2 How well has the programme been implemented? (e.g. best use of resources, captured the right people, in the best ways?)</p>	<p>2. EXECUTION:</p> <ol style="list-style-type: none"> Did the programme engage the right level of expertise to address the science and marketing challenges? Were the programme’s structure, systems and management effective? How well did the programme do in achieving its milestones and achievement measures? Were there any external changes that impacted on the programme? Were these anticipated at the start of the programme? How effective was the programme’s governance?
<p>3 What are the lessons to be learnt from the programme and implications for PGP investment in other programmes</p>	<p>3. LESSONS LEARNED</p> <ol style="list-style-type: none"> What were the main lessons from the programme? In particular lessons from the findings on the programme’s outcomes and its execution. With the benefit of hindsight could the programme have been better designed and implemented (considering what would have been known at the time)? What additional information would have been useful for MPI to have in deciding to invest? <p>What are the implications, if any, for the PGP in terms of lessons, benefits, risks, value chains, sectors and future strategy in this area?</p>



Evaluation Process

- 1 The evaluation will be carried out by an independent consultant appointed by MPI. The consultant will be supported by a subject matter expert selected and appointed separately by MPI.
- 2 The evaluation will be done by reviewing key programme documents, analysis and stakeholder interviews. The Final Programme Report is a key reference document.
- 3 The Investment Manager from MPI (Rob Miller) will provide key liaison support and supply the documents to be reviewed.
- 4 Documents to be used as the basis of the review will include:
 - a Final Programme Report
 - b Annual Plans and Quarterly Reports
 - c Outcome Logic Model which lists expected outcomes
 - d Medium-term outcome measures
 - e Original Business Case
 - f Independent Progress Review.
- 5 Phone or face-to-face interviews to be held with:
 - a Programme Manager – Gavin Sheath
 - b Investment Manager – Rob Miller (MPI)
 - c Kingi Smiler – chair Programme Steering Group
 - d Richard Wyeth – CEO Miraka
 - e Nick Hume – CEO WMI
 - f James Groenhart - CEO Kanematsu NZ
 - g Brendan Haigh – Ag Research
 - h John Parker – Chair Investment Advisory Panel (or a delegated panelist).

Deliverables

- 1 An **evaluation plan** (approximately 2 pages), including the timeline for completion.
- 2 **Implementation** of the evaluation plan, including additional data collection, e.g. stakeholder interviews;
- 3 A **discussion** of evaluation findings with the Director Investment Programmes and the Investment Manager before the report is written.
- 4 A face to face presentation on the evaluation findings to Ministry staff and, if required, to the PGP programme partners and other Crown agency officials.
- 5 An **evaluation report** for MPI and Whai Hua Partners.
- 6 A **public version of the evaluation report**, (with commercially sensitive information removed) approved by the Director Investment Programmes and Whai Hua Partners suitable for publication on MPI's PGP webpage.



Timelines

Action	Date
Proposal due	10 May 2017
Contractor selection and contracting completed	19 May 2017
Discussion with MPI on evaluation findings	16 June 2017
Draft Report Due	30 June 2017
Final Reports Due	21 July 2017

Confidentiality

Members of the evaluation team will receive information that may include confidential, contentious or commercially sensitive details. All relevant information will be put before the team for its members to consider and communicate about issues freely and frankly.

The information supplied to the evaluation team and the findings from the review, and any subsequent discussions, must remain confidential to MPI, the Whai Hua Partners and the evaluation team.

Members of the evaluation team will sign a Confidentiality Agreement prior to receiving information for the evaluation.

